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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte EGBERT A. VON JAKUSCH and DIETER JUNG

Appeal 2008-5128
Application 09/856,416
Technology Center 3700

Decided:[1] March 20, 2009

Before DONALD E. ADAMS, LORA M. GREEN, and
MELANIE L. McCOLLUM, *Administrative Patent Judges*.

McCOLLUM, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 involving claims to adhesive tape. The Examiner has rejected the claims as obvious. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

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[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

STATEMENT OF THE CASE

Claims 1, 2, 4-10, 17, and 18 are on appeal. Claims 11-16 are also pending but have been withdrawn from consideration by the Examiner (App. Br. 3). We will focus on claims 1 and 17, which read as follows:

1. An adhesive tape comprising a backing comprising a fibrous woven or nonwoven layer of thermoplastic polymer fibers, said backing having a first side formed of said fibrous layer with a silicone release layer and a second side of the backing opposite the first side having thereon a pressure sensitive adhesive layer, said silicone release layer comprising a cured reaction product of a curable composition comprising (i) a polydialkylsiloxane having acrylate and/or methacrylate groups and (ii) an organic compound free of silicon and comprising at least two reactive groups selected from an acrylate or a methacrylate group, said adhesive tape having a 90° peel adhesion of at least 6 N/2.54cm relative to a polyethylene film surface and said adhesive tape having a 90° peel adhesion Keil test value of not more than 1 N/2.54cm, wherein the ratio of the average number of dialkylsiloxane units to the average number of acrylate and methacrylate groups of said polydialkylsiloxane is between 10 and 15 and wherein said organic compound has a viscosity of at least 500mPa s at 25°C.

17. An adhesive tape according to claim 1 wherein the weight ratio of the polydialkylsiloxane to the organic compound is between 8:92 and 35:65.

Claims 1, 2, 4-10, 17, and 18 stand rejected under 35 U.S.C. § 103(a) as obvious over Tuschy (WO 96/21413, Jul. 18, 1996) in view of Nguyen (US 5,616,629, Apr. 1, 1997) and Newman (US 3,716,437, Feb. 13, 1973) (Ans. 4).

The Examiner relies on Tuschy for teaching "an adhesive tape (20) comprising a fibrous nonwoven layer (21) of fibers with a silicone release coating on one surface (23) and a pressure-sensitive adhesive layer (24) on the opposite surface (22)" (*id.*).

The Examiner relies on Newman for teaching "a thermoplastic nonwoven and film laminate substrate for an adhesive tape" and that "[t]his provides for a tape that is both soft and has a high tensile strength" (*id.*).

The Examiner relies on Nguyen for teaching "the specific types of polydialkylsiloxane and acrylate release coatings" and that "[t]his coating provides an optimized release force" (*id.* at 4-5). In particular, the Examiner argues that "Nguyen teaches ranges of ratios of the average number of dialkysiloxane units to the average number of acrylate and methacrylate groups of the polydialkylsiloxane that overlap that of the instant invention" (*id.* at 5).

The Examiner concludes that it would have been obvious "to select the laminate construction of Newman and the release coating of Nguyen to be used in the tape system of Tuschy in order to provide a soft, high tensile-strength substrate having a release coating with an acceptable release force" (*id.* at 5). "Regarding the specific functional characteristics concerning peel adhesion, [the Examiner finds that] optimization of performance vectors within prior art conditions or through routine experimentation is not sufficient to patentably distinguish an invention over the prior art" (*id.*).

ISSUES

Did the Examiner err in concluding that Nguyen discloses or suggests the release layer of claim 1 and more particularly of claim 17 and that it would have been obvious to incorporate this release layer on the backside of Tuschy's adhesive tape?

FINDINGS OF FACT

1. Tuschy discloses:

> a prelaminated composite tape and mechanical fastener in a stable roll from which a composite adhesive closure tape tab for disposable articles can be cut, which comprises a support sheet and a mechanical fastener, wherein the support sheet has a fastening surface with a bonding layer and a back side surface which is provided with means for increasing the static friction, whereby a first axial extending section of the support sheet has a patch comprising a mechanical fastener disposed on the bonding layer, and a second axial extending section of the support sheet has an exposed bonding layer which is attached to the edge portion of the disposable article in the production process.

(Tuschy 3: 20-31.)

2. Tuschy also discloses that a "low adhesion backsize (LAB) may be provided on the back side surface 23 of the support sheet. For example, the back side surface 23 can be coated with a release layer, such as a silicone layer." (*Id.* at 5: 27-30.)

3. Nguyen discloses a radiation-curable release composition comprising (A) an organopolysiloxane represented by Formula (I) and (B) an organosiloxane copolymer represented by Formula (II) (Nguyen, col. 2, ll. 29-58).

4. The organopolysiloxane of Formula (I) includes dialkylsiloxane units and at least one acrylate, epoxy, or vinyl ether unit (*id.* at col. 3, ll. 11-37).

5. Appellants do not dispute that "Nguyen teaches ranges of ratios of the average number of dialkysiloxane units to the average number of acrylate and methacrylate groups of the polydialkylsiloxane that overlap that of the instant invention" (Ans. 5).

6. Nguyen discloses that the "radiation-curable compositions . . . generally contain from about 10% to about 99% by weight . . . organopolysiloxane (A)" (Nguyen, col. 4, ll. 26-29).

7. In addition, Nguyen discloses that the copolymers of Formula (II) "are sometimes referred to in the art as MQ resins" and discloses including these copolymers in the radiation-curable release compositions in an amount of "from about 2% to about 35% by weight" (*id.* at col. 5, ll. 3-50).

8. Nguyen also discloses that the radiation-curable composition may also contain "(E) at least one acrylated or methacrylated organic polyhydroxy compound or polyamino compound. These compounds contain at least two acryloyl or acrylyl groups, or at least two methacryloyl or methacrylyl groups which form a network upon polymerization." (*Id.* at col. 6, ll. 38-44.)

9. In addition, Nguyen discloses acrylated or methacrylated organic compounds (E) having "viscosities at 25° C. of from about 2 to about 2000 cps" (*id.* at col. 7, ll. 20-21).

10. Nguyen also discloses including compound (E) in the radiation-curable release compositions in an amount of from about 0% to about 80% by weight (*id.* at col. 7, ll. 44-49).

11. In addition, Nguyen discloses coating various substrates with the radiation curable release compositions to form release coatings thereon (*id.* at col. 9, ll. 38-46).

12. Nguyen also discloses that, "[w]hen the release compositions are cured such as by radiation, the cured compositions exhibit a desirable

high and controlled release force at high speeds such as the speeds utilized in label processing" (*id.* at col. 3, ll. 2-6).

13. In addition, Nguyen discloses:

> It is desirable that silicone-coated release papers and films have a release force which is low enough to enable the release paper to be easily removed from a pressure-sensitive adhesive-coated substrate but not so low that the release paper will become separated from the pressure-sensitive adhesive coating by forces normally encountered in the processing of the construction.

(*Id.* at col. 1, ll. 39-47.)

14. The Specification discloses an "adhesive tape having a 90° peel adhesion of at least 6 N/2.54cm relative to a polyethylene film surface and . . . having a Keil test value of not more than 1 N/2.54cm" (Spec. 5: 6-7).

15. The 90° peel adhesion test evaluates "the ability of the adhesive tape to adhere to a polyethylene film after the adhesive has been in contact with the silicone-based release material" (*id.* at 22: 20-24).

16. The Keil test measures "the force required to separate an adhesive tape from a release-coated surface" (*id.* at 24: 12-14).

17. The Specification includes various examples and comparative examples (*id.* at 26: 12 to 32: 10).

18. In Example 1, a suspension prepared from a "mixture of 30 wt % UV-curable silicone (available as TEGO RC-715 . . .), 70 wt % ditrimethylolpropanetetraacrylate (DMPTA, M_w = 438, viscosity = 1100 mPa s, available as E 140 . . .) and 3 wt. % UV polymerization initiator (available as DAROCUR 1173 . . .) was . . . applied to [a] non-woven surface of [a] backing" and cured (*id.* at 26: 21 to 27: 4). "A single

layer of pressure-sensitive adhesive was then applied to the opposite, film-bearing side of the backing," thus forming adhesive tape (*id.* at 27: 6-11).

19. In Comparative Example 3, "Example 1 was repeated with the exception that instead of 30 wt % RC-715 silicone, 30% of a commercially available mixture of UV-curable silicones was employed. The silicone mixture, designated commercially as TEGO RC 708, is a 70/30 weight:weight mixture of an acrylate-functionalized polydimethylsiloxane (RC-726, functionality 108:6 or 18) and MQ resin." (*Id.* at 29: 22-27.)

20. RC-726 is an organopolysiloxane within Nguyen's Formula (I) (Nguyen, col. 4, ll. 4-16). The MQ resin in TEGO RC 708 is an acrylated organosiloxane copolymer within Nguyen's Formula (II) (*id.* at col. 5, ll. 30-36).

21. The Specification states that "MQ resin is known to have the effect of increasing the release force of release compositions employed" (Spec. 29: 27-28).

22. In Comparative Example 3, the "release force as measured by the Keil test was 433 cN/2.54 cm. Due to the presence of the MQ resin, the release force was found to be too high and the nonwoven backing was delaminated as the adhesive layer was peeled away." (*Id.* at 30: 5-7.) In addition, the adhesive tape had a 90° peel adhesion of 5.9 N/2.54 cm (*id.* at 34: Table 2).

23. "Comparative Example 4 was prepared using a (meth)acrylate-functional polydimethylsiloxane (functionality = 18) available as TEGO RC-726" (*id.* at 30: 9-11), which is the organopolysiloxane of Comparative Example 3 (Findings of Fact (FF) 19-20). The Specification states:

> This silicone has a low number of acrylate groups available for curing and was difficult to cure quickly under economically feasible line speeds and curing conditions on relative open webs exposed to trace oxygen. The resulting silicone release composition was not cured effectively and was transferred at least partially to the adhesive surface as the adhesive was separated from the release layer.
>
> The adhesive surface of the tape did not have acceptable adhesion to polyethylene after it had been contaminated with uncured silicone.

(*Id.* at 30: 12-19.) Specifically, the adhesive tape had a 90° release Keil test value of 12 cN/2.54 cm and a 90° peel adhesion of 4.0 N/2.54 cm (*id.* at 34: Table 2).

PRINCIPLES OF LAW

"In determining whether obviousness is established by combining the teachings of the prior art, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art." *In re GPAC Inc.*, 57 F.3d 1573, 1581 (Fed. Cir. 1995) (internal quotations omitted). "[I]t is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456 (CCPA 1955). In arguing that a claim is not obvious, "[a]ttorney's argument in a brief cannot take the place of evidence." *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974).

ANALYSIS

Tuschy discloses an adhesive tape comprising a support sheet having "a fastening surface with a bonding layer and a back side surface" (FF 1). Tuschy also discloses coating the back side surface of the support sheet with a release layer, such as a silicone layer (FF 2). Nguyen discloses a radiation-

curable release composition (FF 3) and coating various substrates with the composition to form a release coating thereon (FF 11). We agree that the Examiner has set forth a prima facie case that it would have been obvious to select "the release coating of Nguyen to be used in the tape system of Tuschy" (Ans. 5).

Nguyen's radiation-curable release composition comprises an organopolysiloxane of Formula (I) and an organosiloxane copolymer of Formula (II) (FF 3). As the organopolysiloxane of Formula (I), Nguyen discloses compounds including dialkylsiloxane units and at least one acrylate unit in amounts that overlap the range recited in claim 1 (FF 4-5). Nguyen also discloses that the radiation-curable composition may also comprise "at least one acrylated or methacrylated organic polyhydroxy compound or polyamino compound . . . contain[ing] at least two acryloyl or acrylyl groups, or at least two methacryloyl or methacrylyl groups" (FF 8). We conclude that the Examiner has set forth a prima facie case that it would have been obvious to optimize Nguyen's radiation-curable release composition in order to achieve an adhesive tape having a 90° peel adhesion Keil test value of not more than 1 N/2.54 cm and having a 90° peel adhesion of at least 6 N/2.54 cm relative to a polyethylene film surface (Ans. 5).

Appellants argue, however, that "[i]ncreasing the release properties of the backing would have actually been undesirable in Tuschy. Release coatings would inherently tend to decrease friction between [the] hook mechanical fastener and the back of Tuschy's tape laminate increasing the probability that the tape laminate would bec[o]me unstable when in a roll form." (App. Br. 9.) Appellants also argue that it "is not clear that one of

skill in the art would even look to Nguyen et al for a release coating that could be used on a tape structure as described in Tuschy" (*id.* at 10).

We are not persuaded. As acknowledged by Appellants (App. Br. 9), Tuschy discloses coating the back side of its support sheet with "a release layer, such as a silicone layer" (FF 2). In addition, as recognized by Appellants (App. Br. 10), Nguyen is concerned with obtaining a release layer with a relatively high release force (FF 12). Thus, we do not agree that one of skill in the art would not look to Nguyen for a release coating that could be used on a tape structure as described in Tuschy.

In addition, Appellants argue that "the teaching in Nguyen et al does not teach in the direction of applicant's claimed invention, but rather the opposite direction" (App. Br. 10). In particular, Appellants argue that Nguyen "wanted to increase the level of adhesion between their removable release liner and the adhesive of the release liner covered PSA tape (note col. 3, lines 3-6)" (*id.*). As a result, Appellants argue that:

> [T]o achieve the release values required for the claimed tapes and tape laminates[, the organosiloxane copolymer component B] required by Nguyen et al would need to be eliminated by one of skill in the art. Then one of skill in the art would need to further modify the teachings in Nguyen et al and make detailed selections of very particular organopolysiloxanes (component A) disclosed in Nguyen et al and select very particular optional acrylates (component C) disclosed in Nguyen et al. These selections would need to be made to provide a release composition that had properties not desired by Nguyen et al in a tape construction not disclosed by Nguyen.

(*Id.* at 11.)

We are not persuaded. While we recognize that Nguyen is concerned with obtaining a relatively high release force at high speeds (FF 12),

Appellants have not pointed to, nor did we find, any teaching in Nguyen that the coating must provide a release force, as measured by the 90° peel adhesion Keil test, of more than 1 N/2.54 cm. In fact, Nguyen recognizes that it is necessary to balance the need to avoid separation "from the pressure-sensitive adhesive coating by forces normally encountered in the processing of the construction" with the need to "have a release force which is low enough to enable the release paper to be easily removed from a pressure-sensitive adhesive-coated substrate" (FF 13).

In addition, Appellants have not shown that the organosiloxane copolymer component B would need to be eliminated or that it would be necessary to "make detailed selections of very particular organopolysiloxanes . . . disclosed in Nguyen et al and select very particular optional acrylates . . . disclosed in Nguyen" in order to obtain the release values recited in claim 1 (App. Br. 11). Nor have Appellants shown that one of ordinary skill in the art would not have been able to make these selections by routine experimentation.

In particular, in Specification Comparative Example 3, the adhesive tape, which contains an organosiloxane copolymer component B (FF 19-20), has a release force as measured by the Keil test of 433 cN/2.54 cm and has a 90° peel adhesion of 5.9 N/2.54 cm (FF 22), both of which are outside the ranges recited in claim 1. However, the composition used in this example contains about 9 wt% organosiloxane copolymer component B (FF 19). In contrast, Nguyen discloses using as little as about 2 wt% organosiloxane copolymer component B (FF 7). Appellants have not shown that compositions that, for example, contain less organosiloxane copolymer

component B would not provide the claimed release values. Additionally, because organosiloxane copolymer B "is known to have the effect of increasing the release force of release compositions employed" (FF 21), it would have been obvious to reduce the amount of organosiloxane copolymer B in order to obtain a lower release force.

Furthermore, in Specification Comparative Example 4, the composition contains an acrylate-functional polydimethylsiloxane having a functionality of 18 (FF 23), which is outside the range of between 10 and 15 recited in claim 1.[2] The resulting adhesive tape has a 90° peel adhesion of 4.0 N/2.54 cm (FF 23). However, it appears that this value was obtained because the coating was not effectively cured (FF 23). Appellants have not shown that this coating cannot be effectively cured under the right conditions or that, if effectively cured, the tape would not provide the desired release properties. In addition, Appellants have not presented sufficient evidence that any difference in the properties would have been unexpected. "Attorney's argument in a brief cannot take the place of evidence." *In re Pearson*, 494 F.2d at 1405.

Appellants also argue:

> There is no suggestion or teaching in Nguyen et al that using an organic compound free of silicon and comprising at least two reactive groups selected from an acrylate or a methacrylate group and a viscosity of at least 500mPa s at 25°C with the particular organopolysiloxane claimed is a known result effective variable within the context of the construction of applicants claimed invention.

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[2] We note that independent claim 8 does not recite the ratio of between 10 and 15. Thus, arguments with regard to this feature do not apply to claim 8.

(App. Br. 14.)

We are not persuaded. Nguyen discloses that the radiation-curable composition may also comprise "(E) at least one acrylated or methacrylated organic polyhydroxy compound or polyamino compound . . . contain[ing] at least two acryloyl or acrylyl groups, or at least two methacryloyl or methacrylyl groups" (FF 8). Nguyen also discloses that the organic compounds (E) may have "viscosities at 25° C. of from about 2 to about 2000 cps" (FF 9). Thus, we agree that the Examiner has set forth a prima facie case that the organic compound of claim 1[3] would have been obvious. Appellants have not provided sufficient evidence that compounds having a viscosity of at least 500mPa s at 25°C provide an unexpectedly superior result.

With regard to claim 17, Appellants additionally argue that there "is no suggestion or teaching in any of the references that using an organic compound free of silicon and comprising at least two reactive groups selected from an acrylate or a methacrylate in particular ratios with the polydialkylsiloxane having acrylate and/or methacrylate groups . . . has any effect" (App. Br. 14). We are not persuaded. Nguyen broadly discloses amounts that encompass the ratios recited in claim 17 (FF 6 & 10). Appellants have not provided sufficient evidence that the ratios recited in claim 17 provide an unexpectedly superior effect.

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[3] We note that independent claim 8 does not recite that the organic compound has a viscosity of at least 500 mPa s at 25°C. Thus, arguments with regard to this feature do not apply to claim 8.

CONCLUSION

Appellants have not shown that the Examiner erred in concluding that Nguyen discloses or suggests the release layer of claim 1 or more particularly of claim 17 and that it would have been obvious to incorporate this release layer on the backside of Tuschy's adhesive tape. We therefore affirm the rejection of claims 1 and 17. Claims 2, 4-10, and 18 have not been separately argued or have been argued as a group with claims 1 or 17 and therefore fall with claims 1 and 17. 37 C.F.R. § 41.37(c)(1)(vii).

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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